

IN THE CLAIMS

Please cancel Claims 1-32, 37, 38 and 40-55 without prejudice.

Please amend Claims 33-36 and 39 to read as follows (a version of Claims 33-36 and 39 marked up to show the changes is submitted herewith):

AI 33. (Amended) A process for producing a crystal article, comprising producing the crystal article by means of an apparatus for producing a crystal article, the apparatus comprising a crystal growth furnace having a crucible for holding a growth material, a heater for melting the growth material held in the crucible, and a moving means, comprising a crucible-supporting rod, for moving the crucible relatively to the heater; the growth material melted in the crucible being cooled to effect crystal growth, wherein the crystal growth furnace is:

provided with a detector for detecting temperature of the growth material; and

controlled on the basis of changes in temperature detected by the detector; and

a movement rate of the crucible moved by the moving means, a temperature distribution of the heater for heating the crucible and a temperature of the crucible-supporting rod constituting the moving means are controlled on the basis of changes in temperature detected by the detector such that the isothermal face of the growth material is kept convex on the side of a liquid phase.

34. (Amended) A process for producing a crystal article, comprising producing the crystal article by means of an apparatus for producing a crystal article, the

apparatus comprising a crystal growth furnace having a crucible for holding a growth material, a heater for melting the growth material held in the crucible and a moving means for moving the crucible relatively to the heater; the growth material melted in the crucible being cooled to effect crystal growth, wherein the crystal growth furnace is:

provided with a plurality of detectors for detecting temperature of the growth material, which are provided at an underside of the crucible in a plane that intersects the direction of crystal growth; and

controlled on the basis of the temperature detected by the plurality of detectors; being so controlled that the isothermal face of the growth material is kept convex on the side of a liquid phase, and

the plurality of detectors are set in positions different from each other in radius direction of the underside of the crucible .

35. (Amended) A process for producing a crystal article, comprising producing the crystal article by means of an apparatus for producing a crystal article, the apparatus comprising a crystal growth furnace having a crucible for holding a growth material, a heater for melting the growth material held in the crucible and a moving means for moving the crucible relatively to the heater; the growth material melted in the crucible being cooled to effect crystal growth, wherein the crystal growth furnace is:

provided with a measuring means for measuring a rate of heat flow in the crystal growth furnace; and

controlled on the basis of changes in heat flow rate measured with the measuring means, and

a temperature in the crucible and a movement rate of the crucible moved by the moving means are controlled such that the heat flow rate and the movement rate are in proportional relation to one another.

Amend  
36. (Amended) A process for producing a crystal article, comprising producing the crystal article by means of an apparatus for producing a crystal article, the apparatus comprising a crystal growth furnace having a crucible for holding a growth material, a heater for melting the growth material held in the crucible and a moving means for moving the crucible relatively to the heater; the growth material melted in the crucible being cooled to effect crystal growth, wherein the crystal growth furnace is:

provided with a detecting means for detecting generation of latent heat of the growth material; and

controlled on the basis of information given from the detecting means on the generation of latent heat, and

a temperature in the crucible and a movement rate of the crucible moved by the moving means are controlled such that an amount of latent heat and the movement rate are in proportional relation to one another.

39. (Amended) A process for producing a crystal article, comprising producing a fluoride crystal article by means of an apparatus for producing a crystal article, the apparatus comprising a crystal growth furnace having a crucible for holding a growth material of fluoride, a heater for melting the growth material held in the crucible and a moving means for moving the crucible relatively to the heater; the growth material melted in the crucible being cooled to effect crystal growth, wherein the crystal growth furnace is:

A2  
provided with a thermocouple comprising a pair of metal wires  
formed of materials different from each other, and a tube provided around at least one of  
metal wires; the tube comprising a metal composed chiefly of tantalum; and  
controlled on the basis of temperature information attributable to the  
thermocouple.

Please add Claims 56 and 57 as follows:

--56. (New) A process according to claim 34, wherein the apparatus  
comprises plural crucibles that are multistagedly superposed and the plurality of detectors  
detect the temperature of the underside of a lowermost crucible multistagedly superposed.

A3  
57. (New) A process for producing a crystal article, comprising  
producing the crystal article by means of an apparatus for producing a crystal article, the  
apparatus comprising a crystal growth furnace having a crucible for holding a growth  
material, a heater for melting the growth material held in the crucible, and a moving means,  
comprising a crucible-supporting rod, for moving the crucible relatively to the heater; the  
growth material melted in the crucible being cooled to effect crystal growth, wherein the  
crystal growth furnace is:

provided with plural detectors for detecting temperature of the  
growth material; and

controlled on the basis of changes in temperature detected by the  
detectors; and

the detectors detect temperature of at least two points of the  
crucible-supporting rod or a member set to the crucible-supporting rod and temperature of